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Preliminary Individual Comments from Dr. Siobhan Fennessy on the Scientific and Technical Basis of the Proposed Rule Titled “Definition of ‘Waters of the United States’ Under the Clean Water Act”

(August 19, 2014)

Generally speaking I think the USEPA has done an excellent job in drafting the rule. It is based on sound science and will strengthen and clarify the regulatory scheme that protects the integrity of aquatic ecosystems. It is clearly written and its arguments cogently made. However, I was surprised about the release date of the draft rule, and to see that it does not reflect the many suggestions made by the SAB panel to strengthen the EPA Connectivity Report. While I understand the timing of the release is typical, it possibly weakens the value of the SAB process, which is designed to strengthen the scientific basis upon which the draft rule is based. I hope the draft rule can be modified to reflect the work of the SAB panel. A second, related issue is that the report does not use the connectivity gradient framework that was suggested by the SAB panel. Establishing the framework early in the draft rule would aid in the discussions about what constitutes a significant degree of connectivity, which could help define jurisdictional waters.

Q1. The proposed rule has defined Waters of the U.S. under the jurisdiction of the Clean Water Act to mean all tributaries of a traditional navigable water, interstate water, the territorial seas, or impoundment. This definition is based on the conclusion that a significant nexus exists between tributaries (as defined in the proposed rule) and the traditional navigable waters, interstate waters, and the territorial seas into which they flow. Please comment on the adequacy of the scientific and technical basis of this proposed definition.

I fully support this definition of tributaries as Waters of the U.S. in the draft rule. It is based on sound science (as reflected in the Connectivity and SAB Pane reports) and provides a clear and defensible policy acknowledging that tributaries, by definition, are connected to navigable waters. This recognizes their role in transporting sediment and organic matter, processing nutrients and other chemicals, and providing habitat whether or not flows are perennial. The Connectivity Report is used as a basis for this definition, where the draft rule states, “The Report concludes that the scientific literature clearly demonstrates that streams, regardless of their size or how frequently they flow, strongly influence how downstream waters function.” One concern is that the Connectivity Report (Report) and the draft rule use different definitions of “tributary;” this may create unnecessary confusion as the Report is relied upon as the scientific basis of the proposed rule. The Report defines a tributary simply as:

“a stream or river that flows into a higher-order stream or river,”

while the definition in the draft rule is:

“The term tributary means a water physically characterized by the presence of a bed and banks and ordinary high water mark, as defined at 33 CFR 328.3(e), which contributes flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (4) of this section. In addition, wetlands, lakes, and ponds are tributaries (even if they lack a bed and banks or ordinary high water mark) if they contribute flow, either directly or through another water to a water identified in paragraphs (a)(1) through (3) of this section. A water that otherwise qualifies

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as a tributary under this definition does not lose its status as a tributary if, for any length, there are one or more man-made breaks (such as bridges, culverts, pipes, or dams), or one or more natural breaks (such as wetlands at the head of or along the run of a stream, debris piles, boulder fields, or a stream that flows underground) so long as a bed and banks and an ordinary high water mark can be identified upstream of the break.

A tributary, including wetlands, can be a natural, man-altered, or man-made water and includes waters such as rivers, streams, lakes, ponds, impoundments, canals, and ditches not excluded in paragraph (2)(iii) or (iv) of this definition.”

The lack of specificity in the Report’s definition may be problematic since it does not make clear that the full extent of the tributary network is included (e.g., headwaters, perennial/ephemeral/intermittent streams), and so the Report does not clearly support the draft rule.

I welcome the clarification that tributaries includes headwaters, and tributaries do not lose their status due to man-made or natural breaks. I also support the clarification that wetlands at the head of a stream (headwater wetlands) are included in the definition (P. 22203). This is very clearly supported by the available literature and the Report, which concludes that wetlands can (for instance) be important water sources, habitats, and exporters of organic carbon.

The draft rule asks for comments about whether wetlands that connect tributary segments and adjacent wetlands should be considered tributaries (noting that tributaries have beds, banks and OHWM), or are they best considered jurisdictional as adjacent waters. To keep the definition of tributary as clean as possible, I recommend that wetlands be removed from the definition of tributaries. Typically they do not have the features used to define tributaries (bed, banks, and OHWM). Basing their jurisdiction on adjacency is more clear, and removes ambiguity about the interpretation of what is a tributary. Wetlands that connect tributaries or sit at the top of headwater streams (headwater wetlands) would remain jurisdictional.

2. The proposed rule has defined Waters of the U.S. under the jurisdiction of the Clean Water Act to mean all waters, including wetlands, adjacent to a traditional navigable water, interstate water, the territorial seas, impoundment, or tributary. This definition is based on the conclusion that a significant nexus exists between adjacent water bodies (as defined in the proposed rule) and traditional navigable waters, interstate waters, and the territorial seas. Please comment on the adequacy of the scientific and technical basis of this proposed definition.

I support the definition of “adjacent waters” as Waters of the U.S. in the draft rule, and the change from the more limited inclusion of “adjacent wetlands” The definition recognizes the importance of adjacent waters to the chemical, physical, or biological functions of other waters (defined as (a)(1) to (a)(5) water bodies). The term “neighboring” is used as a means to determine adjacency. The draft rule includes definitions of “riparian area” and “floodplain” to define the lateral reach of what is “neighboring.” This seems reasonable, but again relies on how the riparian areas and floodplains are identified on the ground.

Adjacent (neighboring) waters can also be defined by having a shallow subsurface hydrologic connection to a jurisdictional water (which is vaguely defined as water within or below the root zone (12”) of the soil, p 22208). The draft rule goes on to say that the strength of the connection, and the determination of neighboring (adjacency), can be assessed by the distance (proximity) between water bodies and jurisdictional waters. While in some circumstances distance can serve

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as a proxy for the degree of connectivity, it may also be misleading, for example in considering the movement of biota (which varies temporally and by species), or the variability in water flows through shallow subsurface connections (due for example, to the availability of water, or the nature of the substrate). The definition of adjacent waters should not rest solely on either 1) geographical proximity (as suggested on p. 22209) or 2) a hydrologic connection. In particular, the movement of biota as a means to establish connectivity should be acknowledged. Limiting the definition of connectivity only to hydrologic connectivity ignores a wealth of literature, and the findings of both the Connectivity Report and the SAB report that discuss the integrated nature of physical, chemical and biological connectivity – as Justice Kennedy stated, we should consider a functional definition of how connectivity ‘benefits the chemical, physical and biological integrity of the Nation’s waters.’ The SAB report makes many suggestions on incorporating the four dimensions of connectivity into an integrated landscape view of ‘riverscapes’ to aid in our understanding of waters in riparian and floodplain settings. Implementing this will require metrics for chemical and biological connectivity.

The definition of ‘riparian’ is problematic as it is based (once again) on hydrologic flows and not the host of other functions that riparian areas provide. The SAB report contains extensive comments on the role of riparian zones in temperature regulation, carbon export, etc.

Finally, there are inconsistencies in how riparian/floodplain waters are described, for example by referring to them on p. 22224 as “bidirectional.” The SAB panel clearly disagreed with the terms unidirectional and bidirectional, stating, “ these terms do not adequately describe the four-dimensional (longitudinal, lateral, vertical, and temporal) nature of connectivity, and the SAB recommends that the Report use more commonly understood terms that are grounded in the peer-reviewed literature.”

3. The proposed rule has defined Waters of the U.S. under the jurisdiction of the Clean Water Act to mean, on a case-specific basis, other waters including wetlands, provided that those waters alone, or in combination with other similarly situated waters, including wetlands, located in the same region, have a significant nexus to a traditional navigable water, interstate water, or the territorial seas. Please comment on the adequacy of the scientific and technical basis of this propose.

This definition of other waters works conceptually, and it acknowledges the cumulative effects of wetlands and other waters on downstream water integrity on a watershed basis, but I wonder how it will be put into practice. Defining waters that, ‘either alone or in combination with other waters similarly situated in the region significantly affect the chemical, physical, or biological integrity of waters of the U.S. in a way that is more than speculative or insubstantial’, will need substantial guidance to operationalize its implementation in the field. When is an effect more than speculative or insubstantial? Adopting the framework suggested in the SAB Panel report would help address this by recognizing the gradient of connectivity and where thresholds may be crossed. And while evaluation of ‘other waters’ on a case-by-case basis (with no specified criteria) does not further the goal of providing regulatory predictability, in some cases the BPJ of agencies in the field will have to be relied upon. This again will require the development of methods to determine when a nexus is significant, including metrics based on hydrologic, chemical and biological connectivity. As it stands now, the draft rule stresses hydrologic connectivity with little recognition of other vectors of connectivity such as the movement of

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biota. A key question is where, along the gradient of connectivity, do the effects of other waters become significant?

Basing the definition on similarly situated waters, and their cumulative contribution to the integrity of downstream waters, is a sound approach. It is well established that wetlands that share a common hydrogeomorphic setting have similar functions and make similar contributions to downstream waters. I also support the recognition in the draft rule that other waters that lack 'bidirectional hydrologic exchanges' can have important effects on the integrity of downstream waters (pg 22223), however this should be reflected more fully in the working definitions provided.

4. The proposed rule defines other terms and excludes specified waters and features from the definition of Waters of the U.S. Please comment on the adequacy of the scientific and technical basis of the other definitions and exclusions.

There are several problematic exclusions. Removing a selection of ditches from jurisdiction includes those that are excavated in uplands, drain uplands, but presumably drain into jurisdictional waters (which begs the question, where do they drain to?). For example, the exclusion of "ditches that are excavated wholly in uplands, drain only uplands, and have less than perennial flow" might apply to much of northwestern Ohio, which is notoriously flat, so much so that it is difficult to move water off the land. When they do flow, they move water and much agricultural run-off to Lake Erie, resulting in this summer's HAB and the loss of drinking water Toledo and surrounding areas. These ditches clearly have an effect on downstream water quality (in the broad sense).

The exclusion of gullies and rills is also problematic. These are noted at several points in the draft rule as important conduits for moving water between jurisdictional waters, making them an important form of hydrological (and other types of) connectivity. Page 22210 says that "Examples of confined surface water hydrologic connections that demonstrate adjacency are swales, gullies, and rills. The frequency, duration, and volume of flow associated with these confined surface connections can vary greatly depending largely on factors such as precipitation, snowmelt, landforms, soil types, and water table elevation. It is the presence of this hydrologic connection which provides the opportunity for neighboring waters to influence the chemical, physical, or biological integrity of (a)(1) through (a)(5) waters." The draft rule goes on to say that they are important in "fill and spill" waters, where flows spill from other waters/wetlands through gullies to stream channels (for example). It isn't clear how or why gullies that link two jurisdictional waters can be excluded.